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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,024	03/16/2005	Raymond Guyomarc'h	0624-1008	2740
466 7590 10/28/2008 YOUNG & THOMPSON 209 Madison Street Suite 500 ALEXANDRIA, VA 22314				
EXAMINER				
RAHIM, AZIM				
ART UNIT		PAPER NUMBER		
3744				
MAIL DATE		DELIVERY MODE		
10/28/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/528,024

**Applicant(s)**

GUYOMARC'H, RAYMOND

**Examiner**

AZIM RAHIM

**Art Unit**

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 July 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-19 are objected to because of the following informalities: In claim 1, lines 24-26, the recitation "the negative pressure maintained for an evaproization of the sprayed cooling water" should be corrected to recite --wherein the negative pressure is maintained for an evaproization of the sprayed cooling water-- to conform with proper sentence format; in claim 1, line 22, the limitation "a system" should be changed to --another system-- in order not to be confused with the limitation "system for cooling the inner wall of the thermal system" as recited in lines 1-2. In claim 2, line 3, the recitation "said cocks terminating in said nozzles" should be corrected to recite --and said cocks terminating in said nozzles-- for correct sentence format. In claims 3 and 4, lines 2 and 3, the limitation "the inside surface" in claim 3 should be corrected to recite --an inside surface--; the limitation "the outside surface" in claim 3 should be corrected to recite --an outside surface--; and the limitation "the outer wall" should be corrected to recite --an outer wall-- in order to establish proper antecedent basis in the claims. in claim 13, lines 11-15, the limitation "maintaining the water-spraying zone delimited by said respective inner and outer walls under negative pressure for an evaporation of the cooling water at a low temperature, the network of tubes being an integral part of the outer wall of the thermal system to be cooled" should be corrected to recite --maintaining a water-spraying zone delimited by said inner wall and an outer walls under negative pressure for an evaporation of the cooling water at a low temperature, and the network of tubes being an integral part of the outer wall of the thermal system to be cooled-- in order to establish proper antecedent basis in this claim and to conform

with proper sentence format. In claims 14 and 15, line 4, the recitation “an vertically” should be corrected to recite --a vertically--. In claim 18, lines 19-21, the recitation “the negative pressure regulated for an evaproization of the sprayed cooling water” should be corrected to recite -- wherein the negative pressure is regulated for an evaproization of the sprayed cooling water-- to conform with proper sentence format. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. Claims 1 and 3-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Authur et al. (US 5,115,184) in view of Heggart et al. (US 4,813,055).

Regarding claims 1, 8, 9, 13-15 and 18, Authur et al. teach a system and method for cooling an inner wall of a thermal system [figure 1] comprising an inner wall (39) and an outer

wall (11), said inner wall being subjected to temperatures greater than or equal to the inner wall's physical capacity (column 1, lines 18-24), said system comprising: a network of tubes (spray nozzles 33) independent of said thermal system to be cooled [spray nozzles 33 are disposed above furnace roof bottom wall 39 interconnected with tubes as illustrated in figure 1], said network of tubes being an integral part of the outer wall [illustrated in figure 1]; cooling water [column 5, lines 35-38] circulating under pressure [column 5, lines 38-42; the spraying of the cooling fluid illustrates that the coolant is under pressure] and at a maintained temperature within said tubes [column 5, lines 38-42, since the inner wall is maintained at a certain temperature, this implies that the water in the tubes can be maintained at a certain temperature]; nozzles [ends of spray heads 34 where the water exits] connected to said tubes [illustrated in figure 1] and configured for atomizing the cooling water ejected from said tubes and spraying the cooling water in full cones via said nozzles against the inner wall [capable of atomizing the water as illustrated in figure 1]; flow cocks (spray heads 34); said network of tubes being an integral part of the outer wall of the thermal system to be cooled [illustrated in figure 1]; and a water spraying zone (23) located between the inner and outer walls [illustrated in figure 1].

Author et al. fail to teach adjustable-flow cocks controllable for controlling the atomizing of the cooling water during the spraying; the water spraying zone being maintained at a negative pressure; a steam-extraction system located in a vertically upper part of the water spraying zone and configured for maintaining the negative pressure within the water spraying zone by extracting steam from within the upper part of the water spraying zone and compressing the extracted steam, the negative pressure regulated for an evaporation of the sprayed cooling water at low temperature.

The general concept of providing controllable adjustable-flow cocks falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Author et al. which teaches that the flow of coolant as adjustable via on/off valve 75 (col. 7, lines 18-22), and it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the use of adjustable flow cocks in order to provide localized control of the flow of coolant through the cocks, which have the ability to cool different areas of the furnace due to varied coolant flow, thus increasing cooling efficiency.

Heggart et al. teach the concept of providing a spray cooling system for cooling a furnace [see abstract, lines 1 and 2] that includes a coolant extraction system [pipes 54 combined with pump 56 and ventri 104], wherein the coolant extraction system maintains a low pressure the pipe, thus maintaining a low pressure within the water spray zone and evaporating coolant [column 7, lines 36-53], and the pump (56) is capable of facilitating the extraction and compression of steam [column 7, lines 36-38]. It is noted that steam that is condensed within pipes 54 is capable of being extracted.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the system of Authur et al. to include the steam extraction system as taught by Heggart et al. in order to minimize the amount of coolant and steam remaining inside the water spray zone, thus increasing cooling efficiency.

In regard to the steam extraction system being located in the vertically upper most part of the water spray zone, the applicant has not established a reference frame in reference to the water spray zone to distinguish what the vertically upper most part is, and the Examiner has interpreted the upper most part as being any portion of the water spray zone.

Regarding claim 3, Arthur et al. teach the limitation of tubes being installed on the inside surface of the outer wall (part of tubing (water supply manifold) extends inside top wall 11; fig. 1).

Regarding claim 4, Arthur et al. teach the limitation of the tubes being installed on the outside surface of the outer wall (tubes 71, explicitly shown in fig. 1).

Regarding claim 5, Arthur et al. teach the limitation of the cooling water circulating in the network of tubes (71) being stabilized with respect to the mineral content and pH (inherent that the sprayed water pH value is not affected by the contaminant and spraying of the water, and is inherent when water having a stabilized pH is being used).

Regarding claim 6, Arthur et al. teach the limitation of the network of tubes being in a closed circuit (explicitly shown in fig. 1, closed within interior space 23) and the cooling water is regenerated continuously (inherent that the water has to be supplied from a water source).

Regarding claims 7, 16, 17 and 19, Arthur et al. teach the limitation of the cooling water contained in the network of tubes is at a temperature less than or equal to 60 degrees Celsius (col. 4 lines 14-20).

Regarding claims 9 and 14, Authur et al. as modified by Heggart et al. teach all the limitations of the claimed invention, and Authur et al. further teach that coolant is drained into an exchanger unit [column 5, lines 42-46; drain manifold], and Heggart et al. further teaches a compressor (pump 56). It is noted that the limitation “so that said compressed steam acquires a temperature and a pressure suitable for power co-generation” is a statement of intended use and the exchanger unit as taught by Authur et al. is capable of performing the intended use function.

Regarding claim 10, Arthur et al. teach the limitation of providing a detecting system composed of contact sensors (thermocouples), which permit continuous monitoring of the wall temperature that is to be regulated (col. 3 lines 66-68, col. 4 lines 1-3, the thermocouples must output temperature information to some sort of system or controller).

Regarding claim 11, Arthur et al. teach the limitation of the cocks providing water flow adjustment (col. 7, lines 18-22, control of coolant flow via on/off valve 75).

Regarding claim 12, Arthur et al. teach the limitations of the cocks having computer-controlled automatic operation (suitable controls, col. 4 lines 1-3).

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Arthur et al. as modified by Heggart et al. as applied to claim 1 above, and further in view of Metlmann et al. (US 4,789,991).



Regarding claim 2 and 11, Arthur et al. as modified by Heggart et al. teach all the limitations of the claimed invention and Arthur et al. also teach the limitation of the adjustable-flow cocks being connected to the tubes (explicitly shown in fig. 1), said cocks terminating in said nozzles (the nozzle portion is provided at the end of spray head 34).

Arthur et al. fail to explicitly teach that the adjustable flow cocks pass through the tubes.

The general concept of providing adjustable flow cocks pass through tubes falls within the realm of common knowledge as obvious mechanical expedient and is illustrated by Metalmann et al. which teaches a spray tube (29) passing through a header tube (30) (col. 5, lines 14-18 and illustrated in fig. 9), and it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the use of adjustable flow cocks pass through tubes in order to provide spraying of coolant in multiple directions, thus increasing cooling effectiveness.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-6 and 8-19 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 7/9/2008 with respect to claims 7 have been fully considered but they are not persuasive. The applicant does not see how the cooling water in the network of tubes is maintained at a temperature of less than or equal to 60 degrees Celsius. The examiner respectfully disagrees. As shown in column 4, lines 14-20 of Arthur et al. teaches that water spray cooling systems have the capability of spraying water at a temperature of 140 degrees F, which equals 60 degrees Celsius. Also, the limitation of claim 7 is a functional limitation which

lends no structure to the claimed invention and I the applicant is reminded that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here. Therefore, for at least these reasons the Examiner respectfully submits that the rejection of claim 7 is properly upheld.

### ***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AZIM RAHIM whose telephone number is (571) 270-1998. The examiner can normally be reached on Monday - Thursday 7am - 3pm EST and Friday 7am - 9:30am EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frantz Jules can be reached on 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. R./  
Examiner, Art Unit 3744  
10/20/2008

/Frantz F. Jules/  
Supervisory Patent Examiner, Art Unit 3744